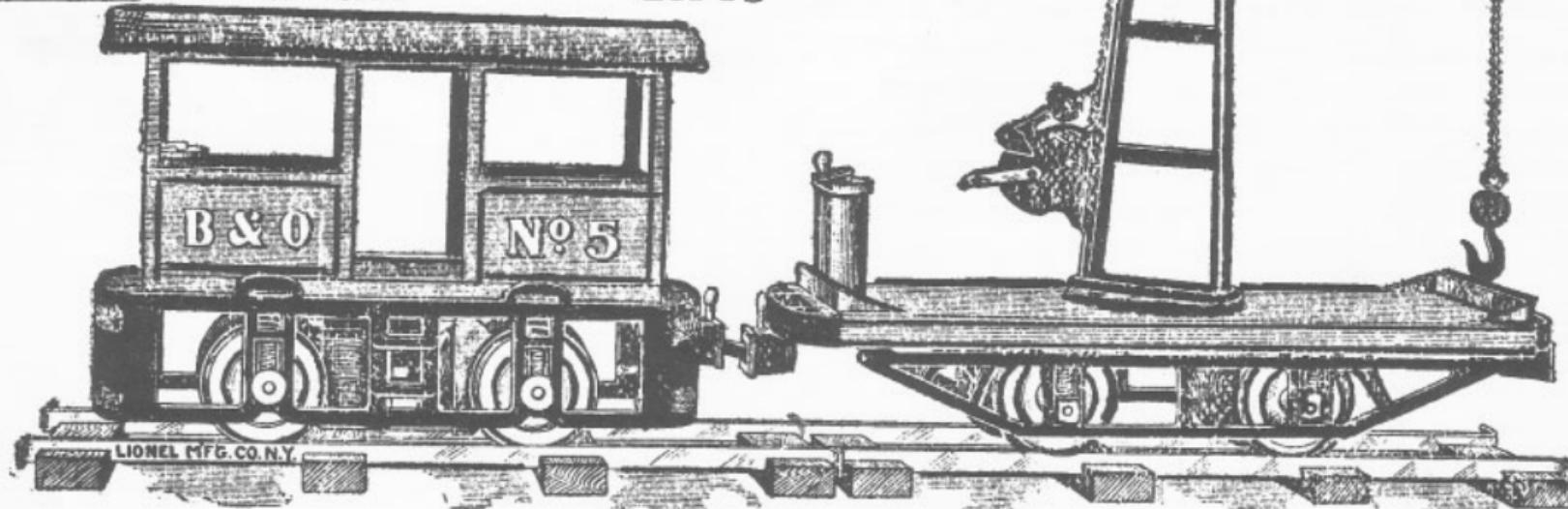




MINIATURE
ELECTRIC CARS

With full accessories for

WINDOW
DISPLAY and HOLIDAY
GIFTS



LIONEL MFG. CO. N.Y.

MANUFACTURED BY

LIONEL MANUFACTURING CO., Incorporated.

24 and 26 MURRAY STREET,

NEW YORK.

INTRODUCTION.

The goods described herein are offered for sale to the general public for the third year, although they have been in use for a long time by mechanical institutions for demonstrating purposes, as they give a thorough insight into the workings of the electric cars now so universally used. We received so many inquiries from the students and their friends for duplicate outfits that we decided to manufacture them in larger quantities, thereby reducing their cost and enabling us to offer them at a popular price.

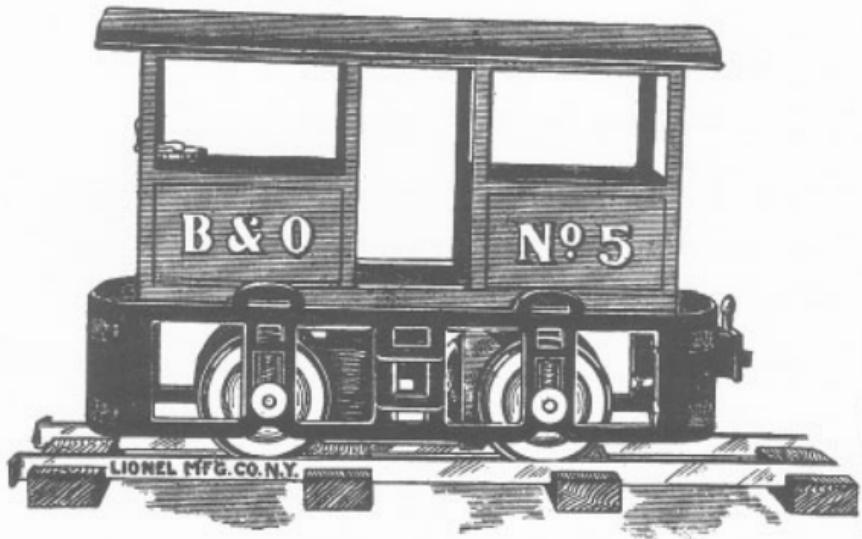
We have on file a large number of letters of recommendation from parties who have used them heretofore, and as our 1903 outfit is superior to any we have yet turned out, it is safe to assume that they are all we claim for them.

Our goods should not be confused with any others on the market — they are in a class by themselves. They are so strong and well constructed that they may be used year to year. All parts are interchangeable, and as we are continually adding new features, a wholly equipped miniature road may be bought from time to time.

OUR TERMS.

Our goods are sold on a small margin, so only on a cash basis.

Sample orders shipped upon receipt of price, or by express C. O. D. if half the amount of the order accompanies it. We do not open accounts for small amounts. If goods are unsatisfactory they may be returned and money will be refunded. Quantity orders shipped on ten days' credit if satisfactory New York City references are furnished.



ELECTRIC LOCOMOTIVE.

(Catalogue No. 100.)

(Actual size, 12 inches long.)

This is a faithful reproduction of the 1,800 horse power electric locomotives used by the B. & O. R. R. for hauling trains through the tunnels of Baltimore. Every line is carried

out to the proper proportions. The trucks, buffers and couplers are cast iron, perfectly constructed and reinforced to withstand more than the ordinary amount of usage. The cab is constructed of sheet steel. All parts are japanned and lettered in harmonious colors.

A full description of the other parts follows:

The CONTROLLER in front, which starts, stops and reverses the car is an exact reproduction of those ordinarily used on large cars. It is cast and nicely finished.

The MOTOR is designed to attain high speed and hauling power, and at the same time consume a minimum amount of current. The armature is laminated and drum wound. To those conversant with electricity the merits of this will be readily appreciated.

The COMMUTATOR AND BRUSHES are scientifically designed, both as to wearing quality and simple adjustment. (Refer to directions on car.)

The WHEELS are two inches in diameter.

The SPRING BEARINGS are one of the principal features of the trucks. They take up any variations in the track, which prevents the car leaving the rails, no matter at what speed it may be going.

The GEARS in this outfit are all machine cut; they will not break or wear out. They are perfectly adjusted, and work noiselessly. Friction is reduced to a minimum.

The SIDE and CROSS BRACES which hold the mechanism in place are cast iron. They

are very rigid, and will withstand more than the ordinary amount of wear and tear.

The Rails are made of 3-8 inch steel, and are cut in sections, so that any shaped track may be formed.

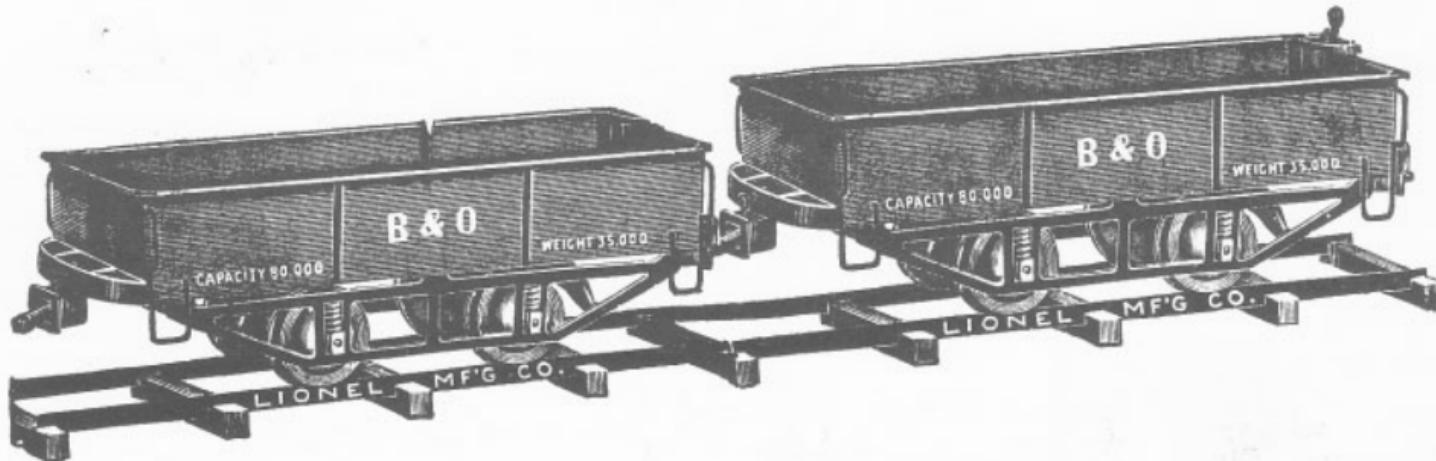
The Ties are grooved to admit the insertion of the rails. The guage of track is 2 7-8 inches.

The Axles are made of 3-16-inch steel rod.

This outfit consists of the car, 30 feet of rail and 60 ties, which will make a rigid track.

Price complete, boxed \$6.00





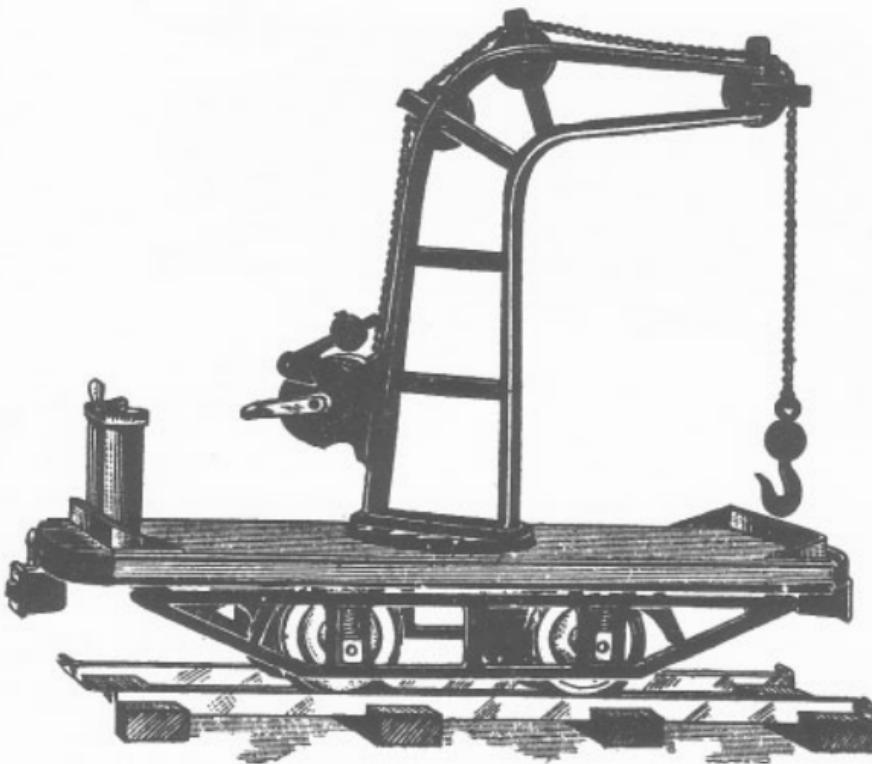
EXPRESS TRAIL CARS.

(Catalogue No. 400.)

This illustration represents our No. 400 trail car coupled with No. 200 express motor car. It will be noticed that they are similar in con-

struction, the only difference being that the trail car has no motor. These cars are fitted with couplers at each end, so that they may be coupled with any of the other motor cars.

Price each \$2.25



ELECTRIC DERRICK CAR.

(Catalogue No. 500.)

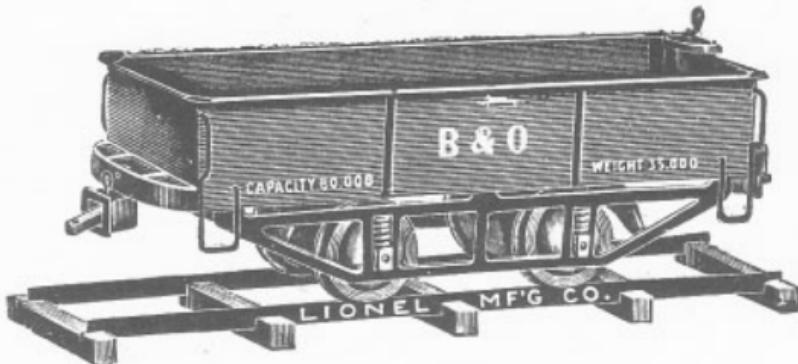
(Actual size, 12 inches long.)

The high standard of the other cars described in these pages is maintained in the construction of this derrick car. The motor and other mechanism are similar to Nos. 100, 200 and 300. The body is constructed of sheet steel and japanned. The derrick is cast iron, 8 1-2 inches high.

The chain, with tackle attached, winds on a cast drum fitted with pall and ratchet. The tackle is operated by means of a crank on the side.

This is the most entertaining outfit we make.

Price complete with 30 feet of rail and
60 ties \$7.00



ELECTRIC EXPRESS.

(Catalogue No. 200.)

(Actual size, 12 inches long.)

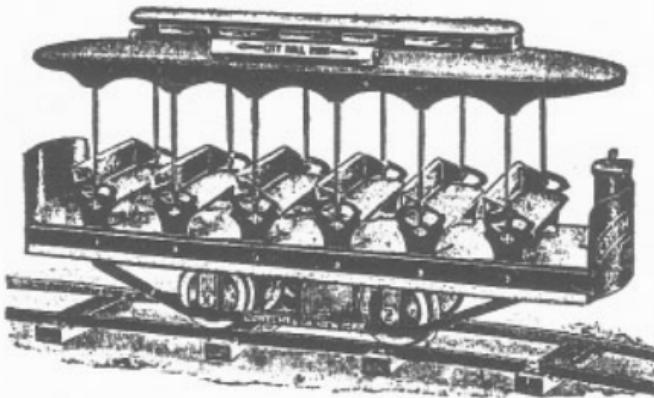
This car has the same mechanism in every respect as the car described before. It will afford the user great pleasure, as it may be

loaded and unloaded.

The car body is constructed of sheet steel. It is perfectly japanned and lettered, and is fitted with steps and hand rails.

Price of outfit complete, with 30 feet of rail and 60 ties \$6.00





ELECTRIC TROLLEY CAR.

(Catalogue No. 300.)

(Actual size, 16 1-2 inches.)

By reference to the above cut, it will be noticed that this car is built on the lines of the regular electric trolley cars. Every feature is carried out to the minutest detail.

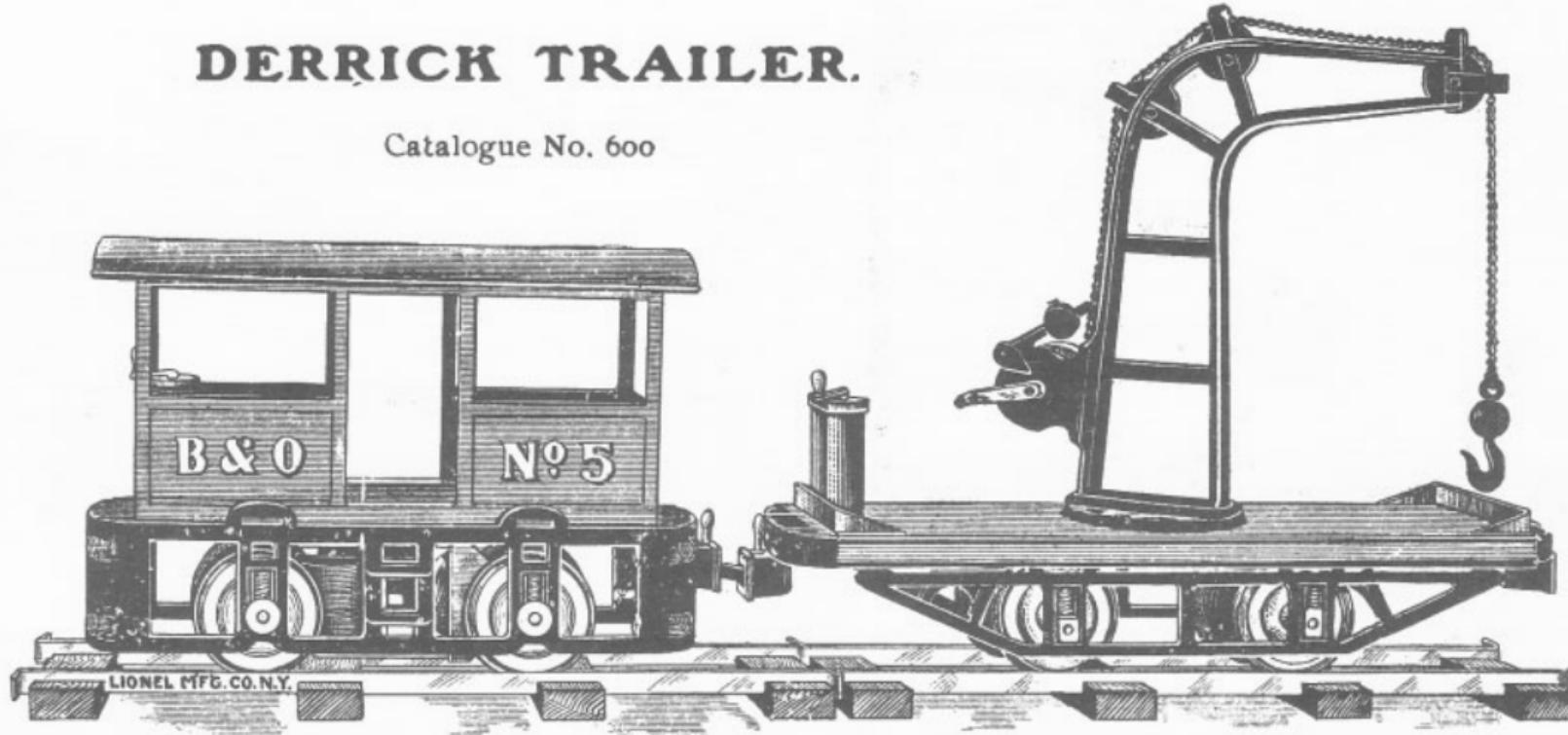
The car body is built of cold rolled steel. It has 6 seats, all of which are reversible, as are the signs at the top. It is finely enameled and lettered.

The mechanism is similar to that of other cars described.

Price of car with 30 feet of rail and 60 ties \$7.00

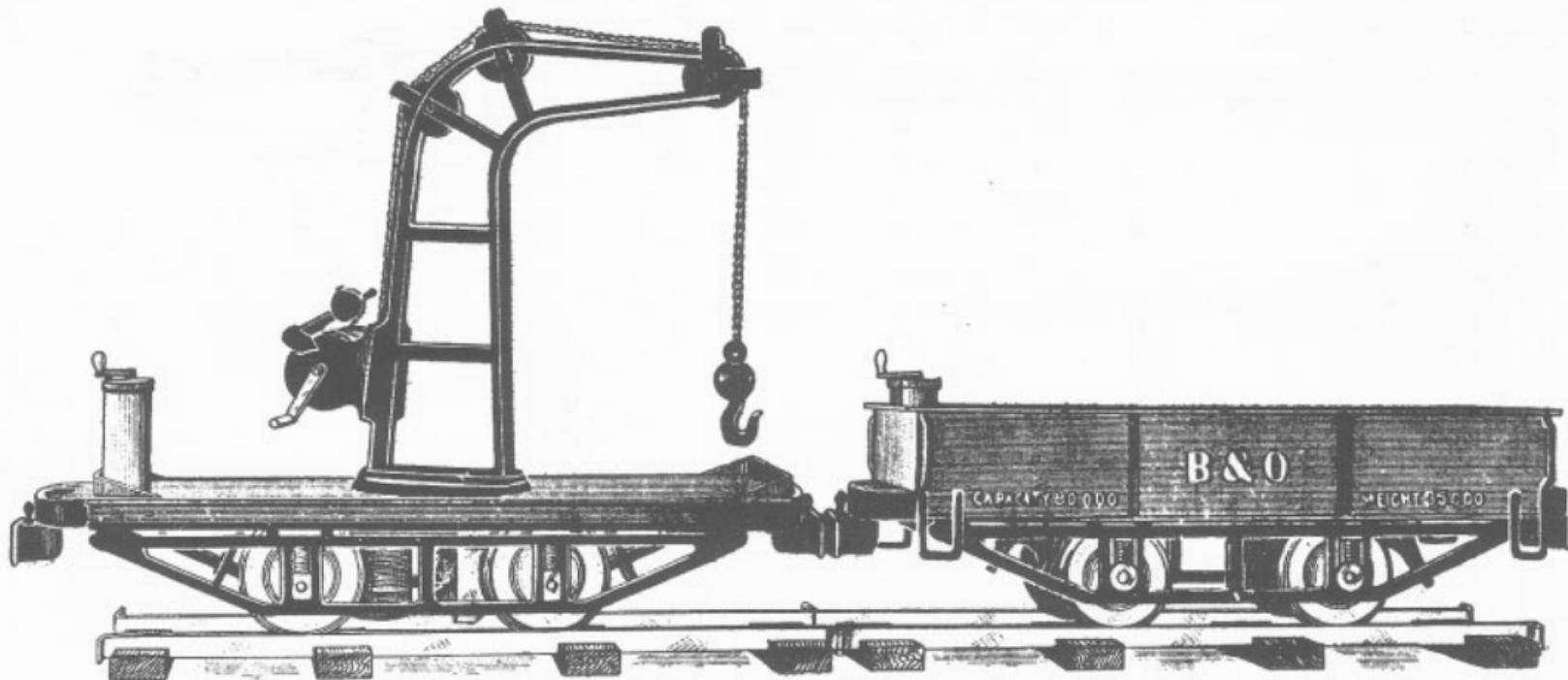
DERRICK TRAILER.

Catalogue No. 600



This illustration shows the derrick car described on the preceding page used as a trailer. This outfit should easily commend itself.

Price of Derrick Trailer.....\$3.25



Cut showing the different combination of cars, so that those not desiring one of each number may choose that which most strongly appeals to him.

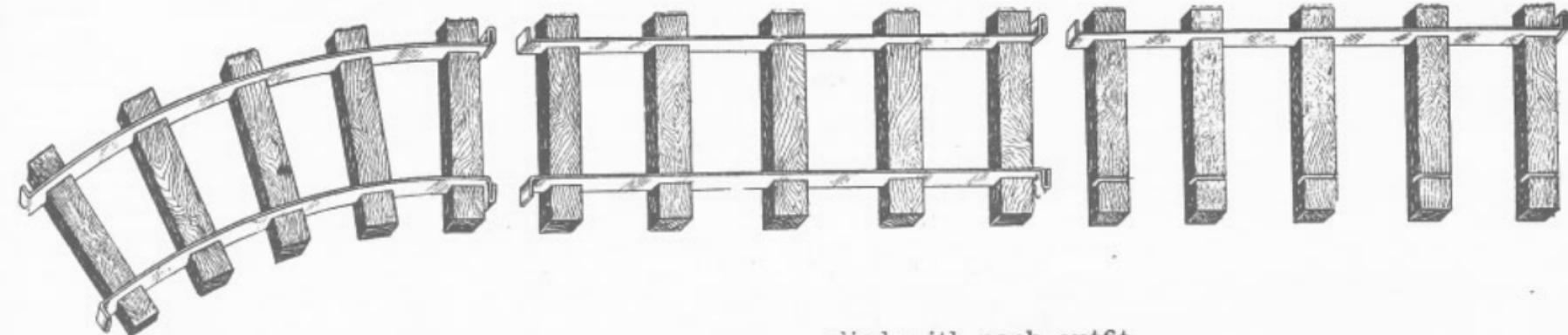
This combination represents No. 500 Derrick Motor car and No. 400 Trailer.

ABOUT BATTERIES.

(Catalogue No. 301.)

We have found it advisable when making up outfits complete with battery, to supply four dry cells, which work satisfactorily when used intermittently for from ten to fifteen hours; allowing the battery to rest is very beneficial to them as it prolongs their usefulness.

Price of four dry cells, with wire and full directions for connecting, \$1.20.



THE TRACK.

(Catalogue No. 310.)

The rails are cut in two lengths. To form a straight track, they should be used in pairs. To form a curve one of the shorter rails is used on the inside and the longer one on the outside. A complete circle is formed by using 8 sections of track. Twelve sections are sup-

plied with each outfit.

The offsets on the ends of the rails should be turned outward and the ties spaced as per illustration. The rails must protrude about 1-8 inch beyond the ties. The sections are joined by sliding the "L" shaped end of one into the hook shaped end of the other.

Price of sets of track, including 30 feet
of rail and 60 ties \$1.50



SUSPENSION BRIDGE.

(Catalogue No. 340.)

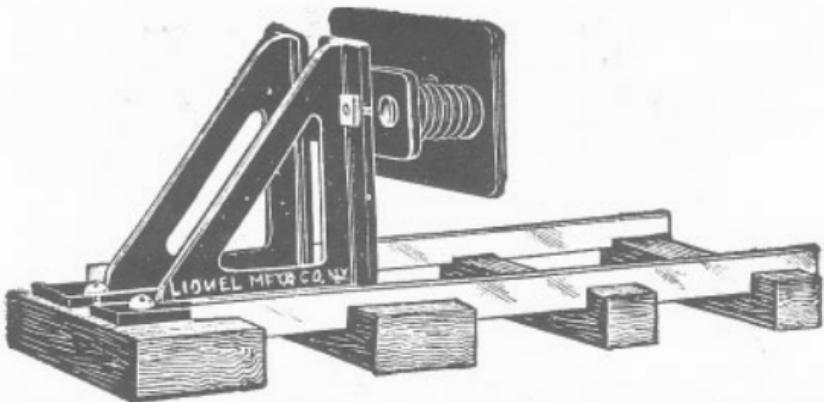
(Actual size, 2 feet long, 14 inches high.)

This bridge is an exact reproduction of the suspension railroad bridges to be found all over the country. It is 2 feet in length and 14 inches high. The braces which form this

bridge are all apart, so that the user may have the advantage of setting it up. Each brace is numbered, so that no error can be made.

This accessory adds to the attractiveness of the road.

Price complete, boxed \$1.50



BUMPER.

(Catalogue No. 350.)

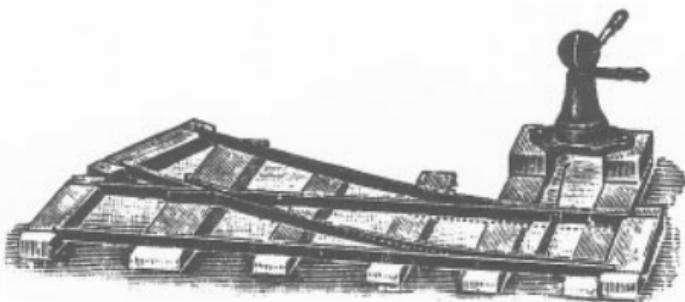
(Actual size, 4 x 4 x 3 inches.)

This arrangement is essential at any terminal of the road, as it prevents the car leaving the track. It is solidly constructed,

and modeled after the large ones commonly used.

The tie supplied with the bumper should be inserted at the third joint from same. This cuts off the current before the car strikes the bumper, and lessens the impact.

Price, packed \$0.50



SWITCH AND SIGNAL.

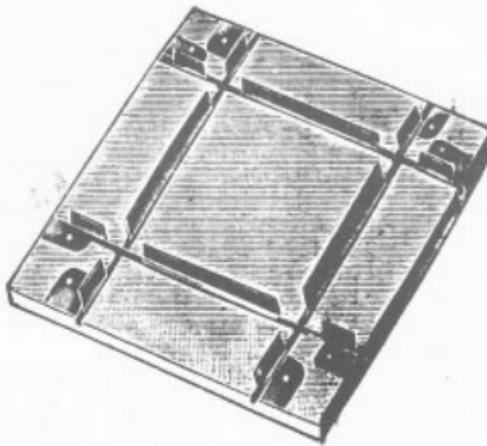
(Catalogue No. 320.)

(Actual size, 17 1-2 x 8 x 4 1-2 inches.)

This auxiliary to the road is very desirable. Its mechanical construction is perfect. All parts work on spring bearings. The lever which shifts the track changes the signal at

the same time. The signal discs are red and white enameled. The switch is 17 1-2 inches long, 8 inches wide and 4 1-2 inches high. It is put in connection with the track the same as any of the sections. All electrical contacts are permanent. The signal is cast iron and neatly finished.

Price, boxed \$1.50



CROSSING.

(Catalogue No. 330.)

(Actual size, 6 inches square.)

Constructed as neatly and substantially as the other parts of the outfit. Connects with the track same as any of the other sections.

The cross-rails are mounted on a base 6 inches square. The electrical connections are permanent.

With this arrangement the track may be made into a number of different forms, and if a well equipped road is desired this part is indispensable.

Price, complete \$0.50

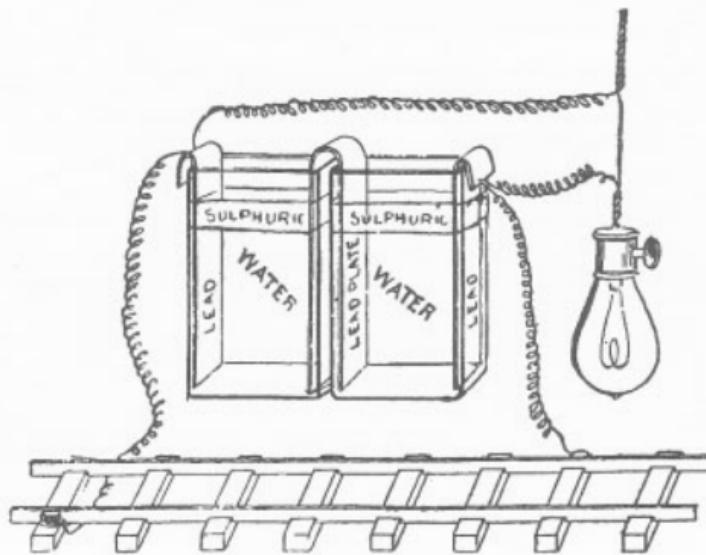


Diagram showing the proper way to operate our cars when utilizing direct electric current.

(Catalogue No. 370.)

The outfit supplied by us consists of two

glass jars 2x1 1-4x3 1-2 inches, and plates of lead 1 inch wide and 1-16 inch thick.

The cells are filled with water to the first line from the bottom, and a sufficient amount of sulphuric acid is added to bring it up to the second mark. NEVER ADD WATER TO THE ACID IN ANY EVENT, BUT POUR THE ACID ON TOP OF THE WATER.

The glass jars are placed with their narrow sides together, and the lead plates inserted, as shown above. The plates must not touch each other. They should be placed apart as far

as possible. The plates with binding-posts, should be bent down on outside of jars one inch, and then extend out horizontally.

ONLY ONE of the wires leading to the incandescent bulb should be cut and both ends connected with the cells and track, as shown above.

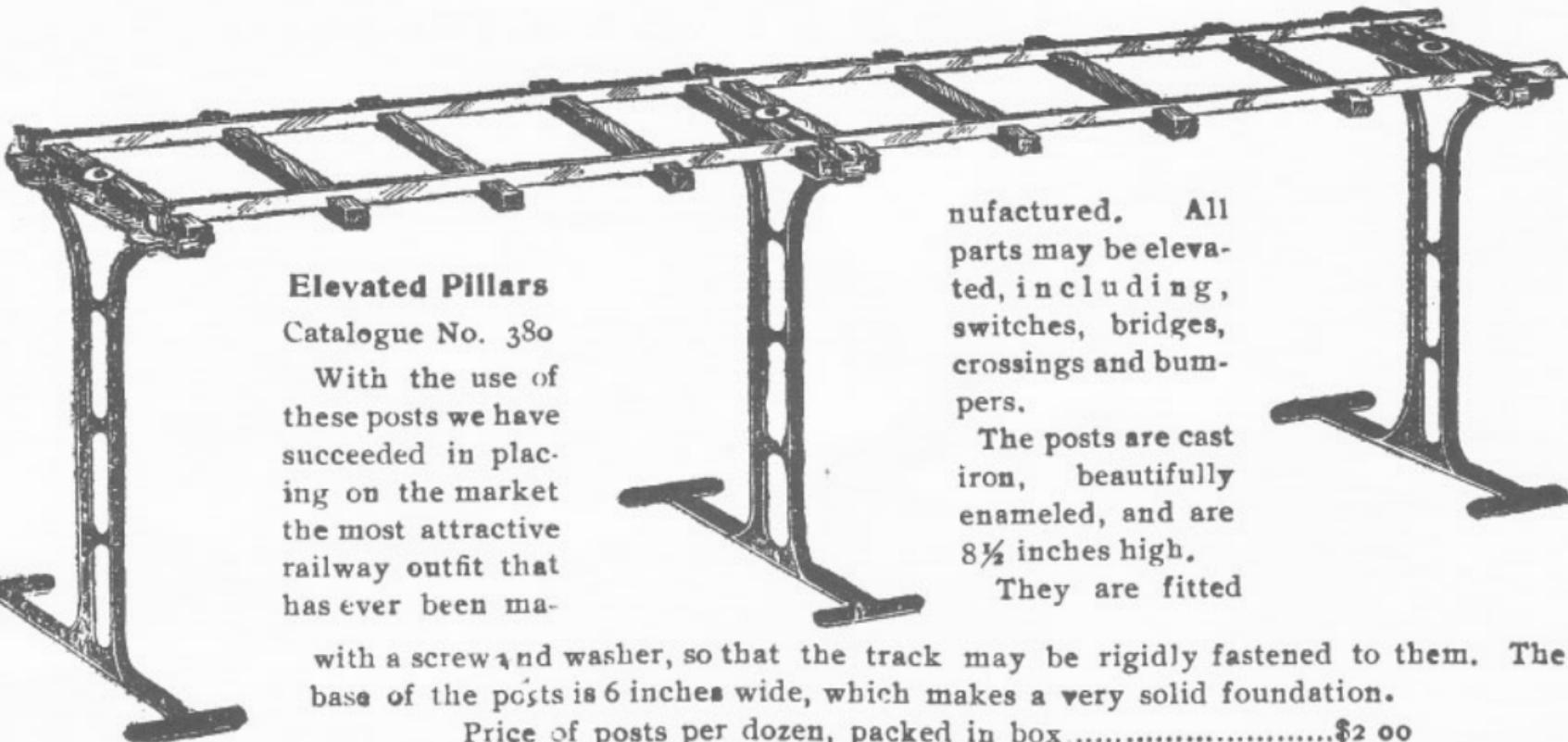
On a 110-volt current a 32-candle-power bulb should be used, or, if a higher speed is desired, a lamp of greater candle-power should be employed.

Price of jars and plates 50 cents

This apparatus may be constructed by anyone, using material as near as possible to that described, and mixing the solution in the proportion of ten parts of water to one part of sulphuric acid by volume.

When the car ceases to operate, the solution in the jars should be renewed.





Elevated Pillars

Catalogue No. 380

With the use of these posts we have succeeded in placing on the market the most attractive railway outfit that has ever been ma-

nufactured. All parts may be elevated, including, switches, bridges, crossings and bumpers.

The posts are cast iron, beautifully enameled, and are 8½ inches high.

They are fitted

with a screw and washer, so that the track may be rigidly fastened to them. The base of the posts is 6 inches wide, which makes a very solid foundation.

Price of posts per dozen, packed in box \$2 00

www.frontier-trading.com

